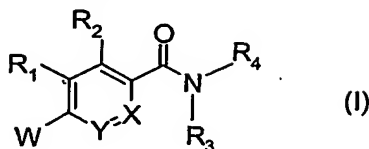


What is claimed is:

1. A compound according to the formula



wherein

R_1 and R_2 are independently hydrogen, cyano, halo, nitro, trifluoromethyl, optionally substituted amino, alkyl, alkoxy, aryl, aralkyl, heteroaryl or heteroaralkyl; or

R_1 and R_2 combined together with the carbon atoms they are attached to form an optionally substituted 5- to 7-membered aromatic or heteroaromatic ring;

R_3 is optionally substituted lower alkyl; or

R_3 and R_2 combined together with the amide group to which R_3 is attached and the carbon atoms to which R_2 and the amide are attached form an optionally substituted 5- to 7-membered carbocyclic or heterocyclic ring;

R_4 is optionally substituted alkyl, cycloalkyl, heterocyclyl, aryl, aralkyl or heteroaralkyl; or

R_4 and R_3 taken together with the nitrogen atom to which they are attached form a 5- to 8-membered ring which may be optionally substituted or may contain another heteroatom selected from oxygen, nitrogen and sulfur; or

R_4 and R_3 taken together with the nitrogen atom to which they are attached form a 8- to 12-membered fused bicyclic ring, which may be optionally substituted or may contain another heteroatom selected from oxygen, nitrogen and sulfur;

W is $-NR_5C(O)R_6$, $-NR_5C(O)OR_6$, $-NR_5C(O)NR_6R_7$, $-NR_5C(S)NR_6R_7$, $-NR_5S(O)_2R_6$, $-NR_5R_8$, $-C(O)NR_6R_7$, $-OR_9$ or $-OC(O)NR_6R_7$ in which

R_5 and R_7 are independently hydrogen, optionally substituted alkyl or aralkyl; or

R_5 and R_1 are optionally substituted alkylene which combined together with the nitrogen atom to which R_5 is attached and the carbon atoms to which W and R_1 are attached form a 5- or 6-membered ring;

R_6 is optionally substituted alkyl, cycloalkyl, heterocyclyl, aryl, aralkyl or heteroaralkyl;

R_8 is optionally substituted alkyl, aralkyl or heteroaralkyl;

R_9 is hydrogen, optionally substituted alkyl, cycloalkyl, heterocyclyl, heterocycloalkyl, aralkyl, heteroaralkyl, alkanoyl, aroyl or heteroaroyl; or

W is aryl or heteroaryl; or

W is hydrogen provided that R_1 is $-NR_5Z$ in which Z is $-C(O)R_6$, $-C(O)OR_6$, $-C(O)NR_6R_7$, $-C(S)NR_6R_7$, $-S(O)_2R_6$, or $-R_8$; or

W and R_1 combined together with the carbon atoms to which they are attached form a 6-membered aromatic or heteroaromatic ring optionally substituted with alkyl, alkoxy, aryl, heteroaryl, halo, $-NR_5Z$, $-C(O)NR_6R_7$, $-OR_9$ or $-OC(O)NR_6R_7$;

X and Y are independently CH or nitrogen; or

$-X=Y-$ is $-CH_2-$, oxygen, sulfur or $-NR_{10}-$ in which R_{10} is hydrogen or lower alkyl;

or a pharmaceutically acceptable salt thereof.

2. A compound according to claim 1 wherein

R_1 and R_2 are independently hydrogen, halo, optionally substituted amino, lower alkyl or lower alkoxy; or

R_1 and R_2 combined together with the carbon atoms they are attached to form an optionally substituted 6-membered aromatic ring;

R_3 is lower alkyl; or

R_3 and R_2 combined together with the amide group to which R_3 is attached and the carbon atoms to which R_2 and the amide are attached form an optionally substituted 5- to 7-membered carbocyclic or heterocyclic ring;

R_4 is optionally substituted alkyl, cycloalkyl, heterocyclyl, aryl, aralkyl or heteroaralkyl; or

R_4 and R_3 taken together with the nitrogen atom to which they are attached form a fully saturated optionally substituted 6-membered ring; or

R_4 and R_3 taken together with the nitrogen atom to which they are attached form a fully saturated 10-membered fused bicyclic ring, which may be optionally substituted or may contain another heteroatom selected from oxygen, nitrogen and sulfur;

W is $-NR_5C(O)R_6$, $-NR_5C(O)OR_6$, $-NR_5C(O)NR_6R_7$, $-NR_5C(S)NR_6R_7$, $-NR_5S(O)_2R_6$, $-NR_5R_8$, $-C(O)NR_6R_7$, $-OR_9$ or $-OC(O)NR_6R_7$ in which

R_5 and R_7 are independently hydrogen or lower alkyl; or

R_5 and R_1 are optionally substituted alkylene which combined together with the nitrogen atom to which R_5 is attached and the carbon atoms to which W and R_1 are attached form a 5-membered ring;

R_6 is optionally substituted alkyl, cycloalkyl, aryl, heteroaryl, aralkyl or heteroaralkyl;

R_8 is optionally substituted alkyl, aralkyl or heteroaralkyl;

R_9 is hydrogen, optionally substituted alkyl, aralkyl, heteroaralkyl or alkanoyl; or

W is aryl or heteroaryl; or

W is hydrogen provided that R_1 is $-NR_5Z$ in which Z is $-C(O)R_6$, $-C(O)OR_6$, $-C(O)NR_6R_7$, $-C(S)NR_6R_7$, $-S(O)_2R_6$, or $-R_8$; or

W and R_1 combined together with the carbon atoms to which they are attached form a 6-membered aromatic ring optionally substituted with alkyl, alkoxy, aryl, heteroaryl, halo, $-NR_5Z$, $-C(O)NR_6R_7$, $-OR_9$ or $-OC(O)NR_6R_7$;

X and Y are independently CH or nitrogen; or

$-X=Y-$ is $-CH_2-$, oxygen, sulfur or $-NR_{10}-$ in which R_{10} is hydrogen or lower alkyl;

or a pharmaceutically acceptable salt thereof.

3. A compound according to claim 2 wherein

R_1 and R_2 are independently hydrogen, halo, optionally substituted amino, lower alkyl or lower alkoxy; or

R_1 and R_2 combined together with the carbon atoms they are attached to form an optionally substituted 6-membered aromatic ring;

R_3 is methyl or ethyl; or

R_3 and R_2 combined together with the amide group to which R_3 is attached and the carbon atoms to which R_2 and the amide are attached form a 5- to 7-membered carbocyclic ring;

R_4 is $-(CHR_{11})_nR_{12}$ in which

n is zero or an integer from 1 to 3;

R_{11} is hydrogen, hydroxy or optionally substituted lower alkyl;

R_{12} is aryl, heterocyclyl or cycloalkyl; or

R_4 and R_3 taken together with the nitrogen atom to which they are attached form an optionally substituted decahydroquinoline or decahydroisoquinoline which may contain another heteroatom selected from oxygen, nitrogen and sulfur;

W is $-NR_5C(O)R_6$, $-NR_5C(O)OR_6$, $-NR_5C(O)NR_6R_7$, $-NR_5C(S)NR_6R_7$, $-NR_5S(O)_2R_6$, $-NR_5R_8$, $-C(O)NR_6R_7$, $-OR_9$ or $-OC(O)NR_6R_7$ in which

R_5 and R_7 are independently hydrogen or methyl; or

R_5 and R_1 are alkylene which combined together with the nitrogen atom to which R_5 is attached and the carbon atoms to which W and R_1 are attached form a 5-membered ring;

R_6 is optionally substituted alkyl, aryl, hetroaryl, cycloalkyl, aralkyl or heteroaralkyl;

R_8 is optionally substituted alkyl, aralkyl or heteroaralkyl;

R_9 is hydrogen, optionally substituted alkyl, aralkyl, heteroaralkyl or alkanoyl; or

W is optionally substituted aryl or heteroaryl; or

W is hydrogen provided that R_1 is $-NR_5Z$ in which Z is $-C(O)R_6$, $-C(O)OR_6$, $-C(O)NR_6R_7$, $-C(S)NR_6R_7$, $-S(O)_2R_6$, or $-R_8$; or

W and R_1 combined together with the carbon atoms to which they are attached form a 6-membered aromatic ring optionally substituted with alkyl, alkoxy, aryl, heteroaryl, halo, $-NR_5Z$, $-C(O)NR_6R_7$, $-OR_9$ or $-OC(O)NR_6R_7$;

X is CH;

Y is CH or nitrogen; or

$-X=Y-$ is $-CH_2-$, oxygen, sulfur or $-NR_{10}-$ in which R_{10} is hydrogen or methyl;

or a pharmaceutically acceptable salt thereof.

4. A compound according to claim 3 wherein

R_1 and R_2 are independently hydrogen, halo, lower alkyl or lower alkoxy; or

R_1 and R_2 combined together with the carbon atoms they are attached to form an optionally substituted 6-membered aromatic ring;

R_3 is methyl or ethyl;

R_4 is $-(CHR_{11})_nR_{12}$ in which

n is zero or an integer of 1;

R_{11} is hydrogen;

R_{12} is optionally substituted cyclohexyl; or R_{12} is optionally substituted 1-adamantyl providing that n is an integer of 1;

W is $-NR_5C(O)R_6$, $-NR_5C(O)OR_6$, $-NR_5C(O)NR_6R_7$, $-NR_5C(S)NR_6R_7$, $-NR_5S(O)_2R_6$, $-NR_5R_8$, $-C(O)NR_6R_7$, $-OR_9$ or $-OC(O)NR_6R_7$ in which

R_5 and R_7 are independently hydrogen or methyl;

R_6 is optionally substituted alkyl, aryl, hetroaryl, cycloalkyl, aralkyl or heteroaralkyl;

R_8 is optionally substituted alkyl, aralkyl or heteroaralkyl;

R_9 is hydrogen, optionally substituted alkyl, aralkyl, heteroaralkyl or alkanoyl; or

W is aryl or heteroaryl; or

W and R_1 combined together with the carbon atoms to which they are attached form a 6-membered aromatic ring optionally substituted with alkyl, alkoxy, aryl, heteroaryl, halo, $-NR_5Z$, $-C(O)NR_6R_7$, $-OR_9$ or $-OC(O)NR_6R_7$;

X is CH;

Y is CH or nitrogen; or

$-X=Y-$ is $-CH_2-$, oxygen, sulfur or $-NR_{10}-$ in which R_{10} is hydrogen or methyl;

or a pharmaceutically acceptable salt thereof.

5. A compound according to claim 4 wherein

R_1 is hydrogen;

R_2 is hydrogen, chloro or methoxy;

R_3 is methyl;

R_4 is $-(CHR_{11})_nR_{12}$ in which

n is zero or an integer of 1;

- 120 -

R_{11} is hydrogen;

R_{12} is optionally substituted cyclohexyl; or R_{12} is optionally substituted 1-adamantyl providing that n is an integer of 1;

W is $-NR_5C(O)R_6$, $-NR_5C(O)OR_6$, $-NR_5C(O)NR_6R_7$, $-NR_5C(S)NR_6R_7$, $-NR_5S(O)_2R_6$, $-NR_5R_8$, $-C(O)NR_6R_7$, $-OR_9$ or $-OC(O)NR_6R_7$ in which

R_5 and R_7 are independently hydrogen or methyl;

R_6 is optionally substituted alkyl, aryl, heteroaryl, cycloalkyl, aralkyl or heteroaralkyl;

R_8 is optionally substituted alkyl, aralkyl or heteroaralkyl;

R_9 is hydrogen, optionally substituted alkyl, aralkyl, heteroaralkyl or alkanoyl;

X is CH ;

Y is CH ;

or a pharmaceutically acceptable salt thereof.

6. A compound according to claim 4 wherein

R_1 is hydrogen;

R_2 is hydrogen or methyl;

R_3 is methyl;

R_4 is $-(CHR_{11})_nR_{12}$ in which

n is an integer of 1;

R_{11} is hydrogen;

R_{12} is optionally substituted 1-adamantyl;

W is optionally substituted aryl or heteroaryl; or

W and R_1 combined together with the carbon atoms to which they are attached form a 6-membered aromatic ring optionally substituted with alkyl, alkoxy, aryl, heteroaryl, halo, $-NR_5Z$, $-C(O)NR_6R_7$, $-OR_9$ or $-OC(O)NR_6R_7$ in which

R_5 and R_7 are independently hydrogen or methyl;

R_6 is optionally substituted alkyl, aryl, hetroaryl, cycloalkyl, aralkyl or heteroaralkyl;

R_9 is hydrogen, optionally substituted alkyl, aralkyl, heteroaralkyl or alkanoyl;

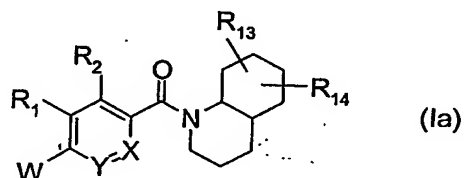
Z is $-C(O)R_6$, $-C(O)OR_6$, $-C(O)NR_6R_7$, $-C(S)NR_6R_7$, $-S(O)_2R_6$, or $-R_8$ in which

R_8 is optionally substituted alkyl, aralkyl or heteroaralkyl;

$-X=Y-$ is $-CH_2-$, oxygen or $-NR_{10}-$ in which R_{10} is hydrogen or methyl;

or a pharmaceutically acceptable salt thereof.

7. A compound according to claim 3 of the formula



wherein

R_1 and R_2 are independently hydrogen, halo, optionally substituted amino, lower alkyl or lower alkoxy; or

R_1 and R_2 combined together with the carbon atoms to which they are attached form an optionally substituted 6-membered aromatic ring;

W is $-NR_5C(O)R_6$, $-NR_5C(O)OR_6$, $-NR_5C(O)NR_6R_7$, $-NR_5C(S)NR_6R_7$, $-NR_5S(O)_2R_6$, $-NR_5R_8$, $-C(O)NR_6R_7$, $-OR_9$ or $-OC(O)NR_6R_7$ in which

R_5 and R_7 are independently hydrogen or methyl; or

R_5 and R_1 are alkylene which combined together with the nitrogen atom to which R_5 is attached and the carbon atoms to which W and R_1 are attached form a 5-membered ring;

R_6 is optionally substituted alkyl, aryl, hetroaryl, cycloalkyl, aralkyl or heteroaralkyl;

R_8 is optionally substituted alkyl, aralkyl or heteroaralkyl;

R_9 is hydrogen, optionally substituted alkyl, aralkyl, heteroaralkyl or alkanoyl; or

W is aryl or heteroaryl; or

W is hydrogen provided that R_1 is $-NR_5Z$ in which Z is $-C(O)R_6$, $-C(O)OR_6$, $-C(O)NR_6R_7$,

-C(S)NR₆R₇, -S(O)₂R₆, or -R₈; or

W and R₁ combined together with the carbon atoms they are attached to form a 6-membered aromatic ring optionally substituted with alkyl, alkoxy, aryl, heteroaryl, halo, -NR₅Z, -C(O)NR₆R₇, -OR₉ or -OC(O)NR₆R₇;

X is CH;

Y is CH or nitrogen; or

-X=Y- is -CH₂-, oxygen, sulfur or -NR₁₀- in which R₁₀ is hydrogen or methyl;

R₁₃ and R₁₄ are independently hydrogen, hydroxy or optionally substituted lower alkyl; or a pharmaceutically acceptable salt thereof.

8. A compound according to claim 7 wherein

R₁ is hydrogen;

R₂ is hydrogen, chloro, methoxy, ethoxy, propoxy or optionally substituted amino;

W is -NR₅C(O)R₆, -NR₅C(O)OR₆, -NR₅C(O)NR₆R₇, -NR₅C(S)NR₆R₇, -NR₅S(O)₂R₆, -NR₅R₈, -C(O)NR₆R₇, -OR₉ or -OC(O)NR₆R₇ in which

R₅ and R₇ are independently hydrogen or methyl;

R₆ is optionally substituted alkyl, aryl, heteroaryl, cycloalkyl, aralkyl or heteroaralkyl;

R₈ is optionally substituted alkyl, aralkyl or heteroaralkyl;

R₉ is hydrogen, optionally substituted alkyl, aralkyl, heteroaralkyl or alkanoyl;

X is CH;

Y is CH;

R₁₃ and R₁₄ are independently hydrogen, hydroxy or optionally substituted lower alkyl; or a pharmaceutically acceptable salt thereof.

9. A compound according to claim 7 wherein

R₁ is methyl, methoxy or optionally substituted amino;

R₂ is hydrogen;

W is $-\text{NR}_5\text{C}(\text{O})\text{R}_6$, $-\text{NR}_5\text{C}(\text{O})\text{OR}_6$, $-\text{NR}_5\text{C}(\text{O})\text{NR}_6\text{R}_7$, $-\text{NR}_5\text{C}(\text{S})\text{NR}_6\text{R}_7$, $-\text{NR}_5\text{S}(\text{O})_2\text{R}_6$, $-\text{NR}_5\text{R}_8$, $-\text{C}(\text{O})\text{NR}_6\text{R}_7$, $-\text{OR}_9$ or $-\text{OC}(\text{O})\text{NR}_6\text{R}_7$ in which

R_5 and R_7 are independently hydrogen or methyl;

R_6 is optionally substituted alkyl, aryl, hetroaryl, cycloalkyl, aralkyl or heteroaralkyl;

R_8 is optionally substituted alkyl, aralkyl or heteroaralkyl;

R_9 is hydrogen, optionally substituted alkyl, aralkyl, heteroaralkyl or alkanoyl;

X is CH;

Y is CH;

R_{13} and R_{14} are independently hydrogen, hydroxy or optionally substituted lower alkyl; or a pharmaceutically acceptable salt thereof.

10. A compound according to claim 7 wherein

R_1 and R_2 are hydrogen;

W is $-\text{NR}_5\text{C}(\text{O})\text{R}_6$, $-\text{NR}_5\text{C}(\text{O})\text{OR}_6$, $-\text{NR}_5\text{C}(\text{O})\text{NR}_6\text{R}_7$, $-\text{NR}_5\text{C}(\text{S})\text{NR}_6\text{R}_7$, $-\text{NR}_5\text{S}(\text{O})_2\text{R}_6$, $-\text{NR}_5\text{R}_8$, $-\text{C}(\text{O})\text{NR}_6\text{R}_7$, $-\text{OR}_9$ or $-\text{OC}(\text{O})\text{NR}_6\text{R}_7$ in which

R_5 and R_7 are independently hydrogen or methyl; or

R_6 is optionally substituted alkyl, aryl, hetroaryl, cycloalkyl, aralkyl, or heteroaralkyl;

R_8 is optionally substituted alkyl, aralkyl or heteroaralkyl;

R_9 is hydrogen, optionally substituted alkyl, aralkyl, heteroaralkyl or alkanoyl;

X is CH;

Y is nitrogen;

R_{13} and R_{14} are independently hydrogen, hydroxy or optionally substituted lower alkyl; or a pharmaceutically acceptable salt thereof.

11. A compound according to claim 7 wherein

W is hydrogen;

R_2 is hydrogen;

R_1 is $-NR_5Z$ in which Z is $-C(O)R_6$, $-C(O)OR_6$, $-C(O)NR_6R_7$, $-C(S)NR_6R_7$, $-S(O)_2R_6$ or $-R_8$ in which

R_5 and R_7 are independently hydrogen or methyl;

R_6 is optionally substituted alkyl, aryl, hetroaryl, cycloalkyl, aralkyl or heteroaralkyl;

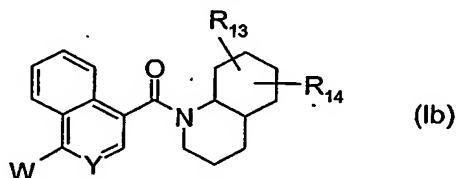
R_8 is optionally substituted alkyl, aralkyl or heteroaralkyl;

X is CH ;

Y is CH ;

R_{13} and R_{14} are independently hydrogen, hydroxy or optionally substituted lower alkyl; or a pharmaceutically acceptable salt thereof.

12. A compound according to claim 7 of the formula



wherein

W is $-NR_5C(O)R_6$, $-NR_5C(O)OR_6$, $-NR_5C(O)NR_6R_7$, $-NR_5C(S)NR_6R_7$, $-NR_5S(O)_2R_6$, $-NR_5R_8$, $-C(O)NR_6R_7$, $-OR_9$ or $-OC(O)NR_6R_7$ in which

R_5 and R_7 are independently hydrogen or methyl;

R_6 is optionally substituted alkyl, aryl, hetroaryl, cycloalkyl, aralkyl or heteroaralkyl;

R_8 is optionally substituted alkyl, aralkyl or heteroaralkyl;

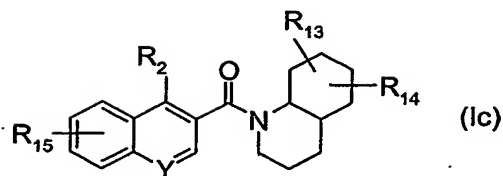
R_9 is hydrogen, optionally substituted alkyl, aralkyl, heteroaralkyl or alkanoyl;

Y is CH ;

R_{13} and R_{14} are independently hydrogen, hydroxy or optionally substituted lower alkyl; or a pharmaceutically acceptable salt thereof.

13. A compound according to claim 7 of the formula

- 125 -



wherein

R_2 is hydrogen, halo or alkoxy;

Y is CH or nitrogen;

R_{13} and R_{14} are independently hydrogen, hydroxy or optionally substituted lower alkyl;

R_{15} is hydrogen, $-NR_5C(O)R_6$, $-NR_5C(O)OR_6$, $-NR_5C(O)NR_6R_7$, $-NR_5C(S)NR_6R_7$, $-NR_5S(O)_2R_6$, $-NR_5R_8$, $-C(O)NR_6R_7$, $-OR_9$ or $-OC(O)NR_6R_7$ in which

R_5 and R_7 are independently hydrogen or methyl;

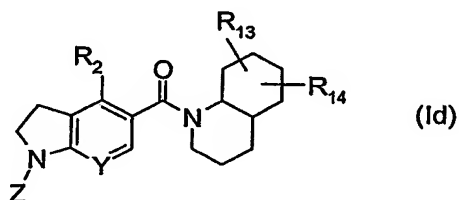
R_6 is optionally substituted alkyl, aryl, hetroaryl, cycloalkyl, aralkyl or heteroaralkyl;

R_8 is optionally substituted alkyl, aralkyl or heteroaralkyl;

R_9 is hydrogen, optionally substituted alkyl, aralkyl, heteroaralkyl or alkanoyl;

or a pharmaceutically acceptable salt thereof.

14. A compound according to claim 7 of the formula



wherein

R_2 is hydrogen;

Z is $-C(O)R_6$, $-C(O)OR_6$, $-C(O)NR_6R_7$, $-C(S)NR_6R_7$, $-S(O)_2R_6$, or $-R_8$ in which

R_6 is optionally substituted alkyl, aryl, hetroaryl, cycloalkyl, aralkyl or heteroaralkyl;

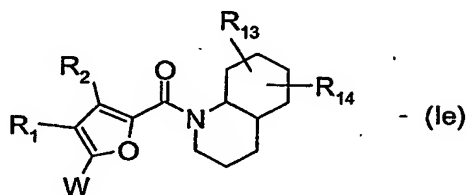
R_7 is hydrogen or methyl;

R_8 is hydrogen, optionally substituted alkyl, aralkyl or heteroaralkyl;

Y is CH;

R₁₃ and R₁₄ are independently hydrogen, hydroxy or optionally substituted lower alkyl;
or a pharmaceutically acceptable salt thereof.

15. A compound according to claim 7 of the formula



wherein

R₁ and R₂ are independently hydrogen, halo or lower alkyl;

W is aryl or heteroaryl; or

W and R₁ combined together with the carbon atoms to which they are attached form a 6-membered aromatic ring optionally substituted with alkyl, alkoxy, aryl, heteroaryl, halo, -NR₅Z, -C(O)NR₆R₇, -OR₉ or -OC(O)NR₆R₇ in which

Z is -C(O)R₆, -C(O)OR₆, -C(O)NR₆R₇, -C(S)NR₆R₇, -S(O)₂R₆, or -R₈;

R₅ and R₇ are independently hydrogen or methyl;

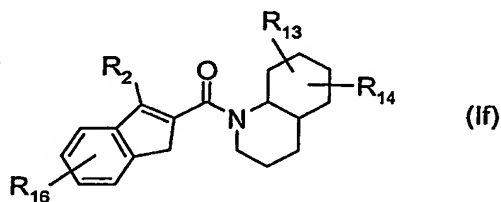
R₆ is optionally substituted alkyl, aryl, heteroaryl, cycloalkyl, aralkyl or heteroaralkyl;

R₈ is optionally substituted alkyl, aralkyl or heteroaralkyl;

R₉ is hydrogen, optionally substituted alkyl, aralkyl, heteroaralkyl or alkanoyl;

R₁₃ and R₁₄ are independently hydrogen, hydroxy or optionally substituted lower alkyl;
or a pharmaceutically acceptable salt thereof.

16. A compound according to claim 7 of the formula



wherein

R_2 is hydrogen, halo or lower alkyl;

R_{13} and R_{14} are independently hydrogen, hydroxy or optionally substituted lower alkyl;

R_{16} is hydrogen, halo, alkyl, aryl, heteroaryl or $-NR_5Z$ in which

Z is $-C(O)R_6$, $-C(O)OR_6$, $-C(O)NR_6R_7$, $-C(S)NR_6R_7$, $-S(O)_2R_6$, or $-R_8$;

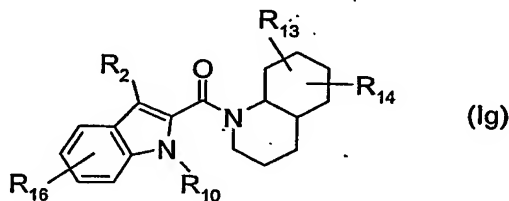
R_5 and R_7 are independently hydrogen or methyl;

R_6 is optionally substituted alkyl, aryl, heteroaryl, cycloalkyl, aralkyl or heteroaralkyl;

R_8 is optionally substituted alkyl, aralkyl or heteroaralkyl;

or a pharmaceutically acceptable salt thereof.

17. A compound according to claim 7 of the formula



wherein

R_2 is hydrogen, halo or lower alkyl;

R_{10} is hydrogen or methyl;

R_{13} and R_{14} are independently hydrogen, hydroxy or optionally substituted lower alkyl;

R_{16} is hydrogen, halo, alkyl, aryl, heteroaryl or $-NR_5Z$ in which

Z is $-C(O)R_6$, $-C(O)OR_6$, $-C(O)NR_6R_7$, $-C(S)NR_6R_7$, $-S(O)_2R_6$, or $-R_8$;

R_5 and R_7 are independently hydrogen or methyl;

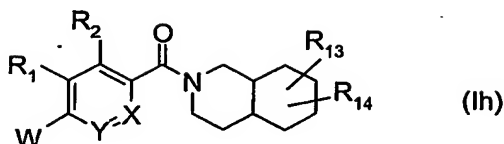
R_6 is optionally substituted alkyl, aryl, heteroaryl, cycloalkyl, aralkyl or heteroaralkyl;

R_8 is optionally substituted alkyl, aralkyl or heteroaralkyl;

or a pharmaceutically acceptable salt thereof.

18. A compound according to claim 3 of the formula

- 128 -



wherein

R_1 and R_2 are independently hydrogen, halo, optionally substituted amino, lower alkyl or lower alkoxy; or

R_1 and R_2 combined together form an optionally substituted 6-membered aromatic ring;

W is $-NR_5C(O)R_6$, $-NR_5C(O)OR_6$, $-NR_5C(O)NR_6R_7$, $-NR_5C(S)NR_6R_7$, $-NR_5S(O)_2R_6$, $-NR_5R_8$, $-C(O)NR_6R_7$, $-OR_9$ or $-OC(O)NR_6R_7$ in which

R_5 and R_7 are independently hydrogen or methyl; or

R_5 and R_1 are alkylene which combined together with the nitrogen atom to which R_5 is attached and the carbon atoms to which W and R_1 are attached form a 5-membered ring;

R_6 is optionally substituted alkyl, aryl, hetroaryl, cycloalkyl, aralkyl or heteroaralkyl;

R_8 is optionally substituted alkyl, aralkyl or heteroaralkyl;

R_9 is hydrogen, optionally substituted alkyl, aralkyl, heteroaralkyl or alkanoyl; or

W is aryl or heteroaryl; or

W and R_1 combined together with the carbon atoms to which they are attached form a 6-membered aromatic ring optionally substituted with alkyl, alkoxy, aryl, heteroaryl, halo, $-NR_5Z$, $-C(O)NR_6R_7$, $-OR_9$ or $-OC(O)NR_6R_7$ in which

Z is $-C(O)R_6$, $-C(O)OR_6$, $-C(O)NR_6R_7$, $-C(S)NR_6R_7$, $-S(O)_2R_6$, or $-R_8$;

R_{13} and R_{14} are independently hydrogen, hydroxy or optionally substituted lower alkyl;

X is CH ;

Y is CH or nitrogen; or

$-X=Y-$ is $-CH_2-$, oxygen, sulfur or $-NR_{10}-$ in which R_{10} is hydrogen or methyl;

or a pharmaceutically acceptable salt thereof.

19. A compound according to claim 18 wherein

R_1 is hydrogen;

R_2 is hydrogen, chloro, methoxy, ethoxy, propoxy or optionally substituted amino;

W is $-NR_5C(O)R_6$, $-NR_5C(O)OR_6$, $-NR_5C(O)NR_6R_7$, $-NR_5C(S)NR_6R_7$, $-NR_5S(O)_2R_6$, $-NR_5R_8$, $-C(O)NR_6R_7$, $-OR_9$ or $-OC(O)NR_6R_7$ in which

R_5 and R_7 are independently hydrogen or methyl;

R_6 is optionally substituted alkyl, aryl, hetroaryl, cycloalkyl, aralkyl or heteroaralkyl;

R_8 is optionally substituted alkyl, aralkyl or heteroaralkyl;

R_9 is hydrogen, optionally substituted alkyl, aralkyl, heteroaralkyl or alkanoyl;

X is CH;

Y is CH;

R_{13} and R_{14} are independently hydrogen, hydroxy or optionally substituted lower alkyl; or a pharmaceutically acceptable salt thereof.

20. A compound according to claim 18 wherein

R_1 is methyl, methoxy or optionally substituted amino;

R_2 is hydrogen;

W is $-NR_5C(O)R_6$, $-NR_5C(O)OR_6$, $-NR_5C(O)NR_6R_7$, $-NR_5C(S)NR_6R_7$, $-NR_5S(O)_2R_6$, $-NR_5R_8$, $-C(O)NR_6R_7$, $-OR_9$ or $-OC(O)NR_6R_7$ in which

R_5 and R_7 are independently hydrogen or methyl;

R_6 is optionally substituted alkyl, aryl, hetroaryl, cycloalkyl, aralkyl or heteroaralkyl;

R_8 is optionally substituted alkyl, aralkyl or heteroaralkyl;

R_9 is hydrogen, optionally substituted alkyl, aralkyl, heteroaralkyl or alkanoyl;

X is CH;

Y is CH;

R_{13} and R_{14} are independently hydrogen, hydroxy or optionally substituted lower alkyl; or a pharmaceutically acceptable salt thereof.

21. A compound according to claim 18 wherein

R_1 and R_2 are hydrogen;

W is $-NR_5C(O)R_6$, $-NR_5C(O)OR_6$, $-NR_5C(O)NR_6R_7$, $-NR_5C(S)NR_6R_7$, $-NR_5S(O)_2R_6$, $-NR_5R_8$, $-C(O)NR_6R_7$, $-OR_9$ or $-OC(O)NR_6R_7$ in which

R_5 and R_7 are independently hydrogen or methyl;

R_6 is optionally substituted alkyl, aryl, hetroaryl, cycloalkyl, aralkyl or heteroaralkyl;

R_8 is optionally substituted alkyl, aralkyl or heteroaralkyl;

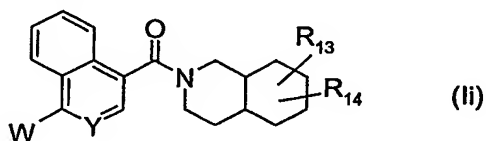
R_9 is hydrogen, optionally substituted alkyl, aralkyl, heteroaralkyl or alkanoyl;

X is CH;

Y is nitrogen;

R_{13} and R_{14} are independently hydrogen, hydroxy or optionally substituted lower alkyl; or a pharmaceutically acceptable salt thereof.

22. A compound according to claim 18 of the formula



wherein

W is $-NR_5C(O)R_6$, $-NR_5C(O)OR_6$, $-NR_5C(O)NR_6R_7$, $-NR_5C(S)NR_6R_7$, $-NR_5S(O)_2R_6$, $-NR_5R_8$, $-C(O)NR_6R_7$, $-OR_9$ or $-OC(O)NR_6R_7$ in which

R_5 and R_7 are independently hydrogen or methyl;

R_6 is optionally substituted alkyl, aryl, hetroaryl, cycloalkyl, aralkyl or heteroaralkyl;

R_8 is optionally substituted alkyl, aralkyl or heteroaralkyl;

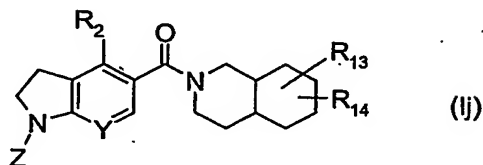
R_9 is hydrogen, optionally substituted alkyl, aralkyl, heteroaralkyl or alkanoyl;

Y is CH;

R_{13} and R_{14} are independently hydrogen, hydroxy or optionally substituted lower alkyl;

or a pharmaceutically acceptable salt thereof.

23. A compound according to claim 18 of the formula



wherein

R_2 is hydrogen;

Z is $-C(O)R_6$, $-C(O)OR_6$, $-C(O)NR_6R_7$, $-C(S)NR_6R_7$, $-S(O)_2R_6$, or $-R_8$ in which

R_6 is optionally substituted alkyl, aryl, heteroaryl, cycloalkyl, aralkyl or heteroaralkyl;

R_7 is hydrogen or methyl;

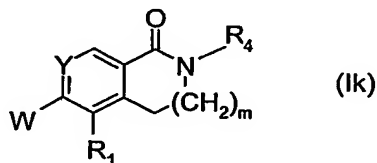
R_8 is hydrogen, optionally substituted alkyl, aralkyl or heteroaralkyl;

Y is CH;

R_{13} and R_{14} are independently hydrogen, hydroxy or optionally substituted lower alkyl;

or a pharmaceutically acceptable salt thereof.

24. A compound according to claim 3 of the formula



wherein

R_1 is hydrogen;

R_4 is $-(CHR_{11})_nR_{12}$ in which

n is zero or an integer from 1 to 2;

R_{11} is hydrogen;

R_{12} is aryl, heteroaryl, heterocyclyl or cycloalkyl;

W is $-NR_5C(O)R_6$, $-NR_5C(O)OR_6$, $-NR_5C(O)NR_6R_7$, $-NR_5C(S)NR_6R_7$, $-NR_5S(O)_2R_6$, $-NR_5R_8$, $-C(O)NR_6R_7$, $-OR_9$ or $-OC(O)NR_6R_7$ in which

- 132 -

R_6 and R_7 are independently hydrogen or methyl;

R_8 is optionally substituted alkyl, aryl, hetroaryl, cycloalkyl, aralkyl or heteroaralkyl;

R_8 is optionally substituted alkyl, aralkyl or heteroaralkyl;

R_9 is (C_{1-6})alkyl substituted by cycloalkyl, alkoxy, cycloalkoxy, alkylthio, aryloxy, heterocyclooxy, arylthio, aryl or heteroaryl;

Y is CH;

m is zero or an integer from 1 to 2;

or a pharmaceutically acceptable salt thereof.

25. A method for the inhibition of 11β -hydroxysteroid dehydrogenase type 1 (11β -HSD1) oxoreductase activity in mammals which method comprises administering to a mammal in need thereof a therapeutically effective amount of a compound of claim 1.
26. A method to control glucocorticoid concentration in mammals which method comprises administering to a mammal in need thereof a therapeutically effective amount of a compound of claim 1.
27. A method according to claim 26, which comprises lowering intracellular and hepatic glucocorticoid concentrations, increasing insulin sensitivity in the adipose tissue and in the muscle, reducing lipolysis and free fatty acid production in the adipose tissue, and inhibiting hepatic gluconeogenesis.
28. A method for the treatment of conditions associated with 11β -HSD1 oxoreductase activity in mammals which comprises administering to a mammal in need thereof a therapeutically effective amount of a compound of claim 1.
29. A method for the treatment of glucocorticoid associated disorders in mammals which method comprises administering to a mammal in need thereof a therapeutically effective amount of a compound of claim 1.
30. A method according to claim 29, which comprises administering a compound of claim 1 in combination with a therapeutically effective amount of insulin, insulin derivative or mimetic, insulin secretagogue, insulinotropic sulfonylurea receptor ligand, insulin sensitizer,

biguanide, alpha-glucosidase inhibitor, GLP-1, GLP-1 analog or mimetic, DPP-IV inhibitor, hypolipidemic agent, anti-obesity agent, cholestyramine, fibrate, nicotinic acid, or aspirin.

31. A method for the treatment of impaired glucose tolerance in Type 2 diabetes which method comprises administering to a mammal in need thereof a therapeutically effective amount of a compound of claim 1.
32. A method for the treatment of Syndrome-X, dyslipidemia, hypertension and central obesity which method comprises administering to a mammal in need thereof a therapeutically effective amount of a compound of claim 1.
33. A pharmaceutical composition comprising a compound of claim 1 preferably in a therapeutically effective amount, in combination with one or more pharmaceutically acceptable carriers.
34. A pharmaceutical composition comprising a compound according to any one of claims 1 to 24 preferably in a therapeutically effective amount, in combination with insulin, insulin derivative or mimetic, insulin secretagogue, insulinotropic sulfonylurea receptor ligand, insulin sensitizer, biguanide, alpha-glucosidase inhibitor, GLP-1, GLP-1 analog or mimetic, DPP-IV inhibitor, hypolipidemic agent, anti-obesity agent, cholestyramine, fibrate, nicotinic acid, or aspirin, preferably in a therapeutically effective amount.
35. A pharmaceutical composition according to claim 33 or 34, for the treatment of impaired glucose tolerance, Type 2 diabetes and central obesity.
36. Use of a pharmaceutical composition according to claim 33 or 34, for the preparation of a medicament for the treatment of conditions associated with 11 β -HSD1 oxoreductase activity.
37. A compound according to any one of claims 1 to 24, for use as a medicament.
38. Use of a compound according to any one of claims 1 to 24, for the preparation of a pharmaceutical composition for the treatment of conditions associated with 11 β -HSD1 oxoreductase activity.
39. Use according to any one of claims 36 or 38, wherein the condition associated with 11 β -HSD1 oxoreductase activity is selected from impaired glucose tolerance, Type 2 diabetes, insulin resistance, dyslipidemia, metabolic Syndrome X and central obesity.